

AN 2000:457005 CAPLUS
 DN 133:97156
 ED Entered STN: 07 Jul 2000
 TI Preparation of (difluoromethyl)benzene derivatives as liquid crystal compounds exhibiting negative anisotropy of permittivity
 IN Tamura, Norio; Fujita, Atsuko; Takeuchi, Hiroyuki; Takeshita, Fusayuki; Nakagawa, Etsuo
 PA Chisso Corporation, Japan
 SO PCT Int. Appl., 104 pp.
 CODEN: PIXXD2
 DT Patent
 LA Japanese
 IC ICM C07C043-225
 ICS C07C047-575; C07C065-26; C07D211-14; C07D213-30; C07D239-26; C07D319-06; C09K019-08; G02F001-13
 CC 75-11 (Crystallography and Liquid Crystals)
 Section cross-reference(s): 74

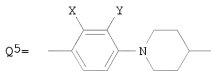
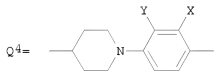
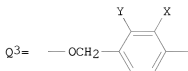
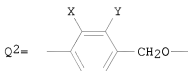
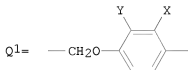
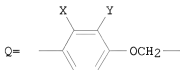
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000039063	A1	20000706	WO 1999-JP6973	19991213
	W: DE, JP, US				
	DE 19982965	T0	20010426	DE 1999-19982965	19991213
	US 6576303	B1	20030610	US 2000-622826	20000824
PRAI	JP 1998-370025	A	19981225		
	WO 1999-JP6973	W	19991213		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000039063	ICM	C07C043-225
	ICS	C07C047-575; C07C065-26; C07D211-14; C07D213-30; C07D239-26; C07D319-06; C09K019-08; G02F001-13
	IPCI	C07C0043-225 [ICM,7]; C07C0043-00 [ICM,7,C*]; C07C0047-575 [ICS,7]; C07C0047-52 [ICS,7,C*]; C07C0065-26 [ICS,7]; C07C0065-00 [ICS,7,C*]; C07D0211-14 [ICS,7]; C07D0211-00 [ICS,7,C*]; C07D0213-30 [ICS,7]; C07D0213-00 [ICS,7,C*]; C07D0239-26 [ICS,7]; C07D0239-00 [ICS,7,C*]; C07D0319-06 [ICS,7]; C07D0319-00 [ICS,7,C*]; C09K0019-08 [ICS,7]; G02F0001-13 [ICS,7]
	IPCR	C09K0019-04 [I,C*]; C09K0019-04 [I,A]; C09K0019-10 [I,C*]; C09K0019-12 [I,A]; C09K0019-18 [I,A]; C09K0019-20 [I,A]; C09K0019-30 [I,C*]; C09K0019-30 [I,A]; C09K0019-34 [I,C*]; C09K0019-34 [I,A]; C09K0019-40 [I,C*]; C09K0019-40 [I,A]
	ECLA	C09K019/04A; C09K019/12; C09K019/18; C09K019/20; C09K019/30A1; C09K019/30A2; C09K019/30A5; C09K019/34A; C09K019/34B1; C09K019/34B2C; C09K019/40F
DE 19982965	IPCI	C07C0043-225 [ICM,7]; C07C0043-00 [ICM,7,C*]; C07C0047-575 [ICS,7]; C07C0047-52 [ICS,7,C*]; C07C0065-26 [ICS,7]; C07C0065-00 [ICS,7,C*]; C07D0211-14 [ICS,7]; C07D0211-00 [ICS,7,C*]; C07D0213-30 [ICS,7]; C07D0213-00 [ICS,7,C*]; C07D0239-26 [ICS,7]; C07D0239-00 [ICS,7,C*]; C07D0319-06 [ICS,7]; C07D0319-00 [ICS,7,C*]; C09K0019-08 [ICS,7]; G02F0001-13 [ICS,7]
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US 6576303 IPCI C09K0019-34 [ICM,7]; C09K0019-30 [ICS,7]; C07C0211-14 [ICS,7]; C07C0211-00 [ICS,7,C*]; C07C0043-225 [ICS,7]; C07C0043-00 [ICS,7,C*]; C07D0239-26 [ICS,7]; C07D0239-00 [ICS,7,C*]; C07D0319-06 [ICS,7]; C07D0319-00 [ICS,7,C*]
 IPCR C09K0019-04 [I,C*]; C09K0019-04 [I,A]; C09K0019-10 [I,C*]; C09K0019-12 [I,A]; C09K0019-18 [I,A]; C09K0019-20 [I,A]; C09K0019-30 [I,C*]; C09K0019-30 [I,A]; C09K0019-34 [I,C*]; C09K0019-34 [I,A]; C09K0019-40 [I,C*]; C09K0019-40 [I,A]
 NCL 428/001.100; 252/299.610; 252/299.630; 252/299.660; 544/298.000; 544/334.000; 544/335.000; 546/193.000; 546/194.000; 546/236.000; 549/369.000; 568/588.000; 568/647.000; 570/127.000; 570/129.000; 570/130.000
 ECLA C09K019/04A; C09K019/12; C09K019/18; C09K019/20; C09K019/30A1; C09K019/30A2; C09K019/30A5; C09K019/34A; C09K019/34B1; C09K019/34B2C; C09K019/40F
 OS MARPAT 133:97156
 GI



AB The liquid crystal compds. represented by general formula R1-A-B1-A2-B2-A3-B3-Z-B4-A4-R2 [where in A1, A2, A3 and A4 are each a single bond, 1,4-cyclohexylene, optionally fluorinated 1,4-phenylene, dioxane-2,5-diyl, pyrimidine-2,5-diyl, piperidine-1,4-diyl, optionally fluorinated pyrimidine-2,5-diyl, or 1-sila-1,4-cyclohexylene; B1, B2, B3 and B4 are each a single bond, 1,2-ethylene, 1,2-ethynylene, 1,2-ethynylene, oxymethylene, methyleneoxy, CO2, O2C, or 1,4-butylene; R1 and R2 are each C1-10 alkyl or at least one fluorine-substituted fluoroalkyl; and Z is a group represented by general formula Q, Q1, Q2, Q3, Q4, or Q5; wherein X is H or F; and Y is difluoromethyl, difluoromethoxy, formyl or carboxyl] are prepared. These compds. exhibit high neg. anisotropy of permittivity (dielec. anisotropy) ($\Delta\epsilon$), and are excellent in low-temperature compatibility with other liquid crystal compds., low in viscosity, and chemical and phys. stable and provide liquid crystal compns. for liquid crystal displays. Thus, fluorination of 1-ethoxy-2-fluoro-3-formyl-4-(4-(4-

pentylcyclohexyl)cyclohexyl)methyloxybenzene by (Diethylamino)sulfur trifluoride (DAST) gave 3-difluoromethyl-1-ethoxy-2-fluoro-4-(4-(4-pentylcyclohexyl)cyclohexyl)methyloxybenzene which exhibited $\Delta\epsilon$ of -8.4.

ST difluoromethylbenzene prepn liq crystal; neg anisotropy permittivity liq crystal; dielec anisotropy difluoromethylbenzene liq crystal

IT Liquid crystal displays

Liquid crystals

(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)

IT	22692-80-4	40817-08-1	50649-59-7	50649-60-0	59855-05-9
	61203-99-4	61204-01-1	63221-88-5	63295-01-2	67589-41-7
	68400-50-0	70567-18-9	74305-48-9	76802-59-0	76802-61-4
	79319-27-0	79709-84-5	79912-85-9	79945-42-9	80944-44-1
	80955-71-1	81701-13-5	81711-13-9	81936-32-5	82832-27-7
	82832-33-5	82832-34-6	82832-57-3	83242-83-5	84655-98-1
	84656-75-7	84656-77-9	85312-59-0	86579-52-4	86778-48-5
	88038-92-0	88416-69-7	88416-84-6	88416-89-1	88639-41-2
	88878-50-6	89129-90-8	92263-41-7	93743-04-5	95495-15-1
	95906-34-6	96184-42-8	96624-41-8	96624-52-1	97398-80-6
	98321-58-5	100497-33-4	100980-86-7	102714-92-1	102714-93-2
	102714-95-4	107215-66-7	107215-74-7	110881-30-6	114291-10-0
	116090-24-5	116090-25-6	116090-30-3	116090-36-9	116090-37-0
	116903-46-9	116903-47-0	116903-48-1	116903-49-2	117923-23-6
	118164-50-4	120893-64-3	121219-85-0	123787-68-8	129738-34-7
	129738-42-7	130746-66-6	130746-72-4	131819-23-3	131819-24-4
	131223-39-8	132123-45-6	132123-46-7	133914-49-5	133914-50-8
	133937-72-1	134412-17-2	134412-18-3	135734-59-7	136922-42-4
	137529-41-0	137529-63-6	139195-59-8	139420-31-8	140212-75-5
	140212-76-6	140212-77-7	142400-92-8	145131-05-1	145305-20-0
	146781-29-5	148462-51-5	148462-52-6	153227-45-3	153227-50-0
	153227-53-3	153429-48-2	155041-85-3	173306-39-3	175859-23-1
	175859-24-2	175859-25-3	175859-28-6	176176-43-5	176889-87-7
	181369-18-6	183145-19-9	183388-45-6	184161-94-2	186320-72-9
	187171-90-0	192131-28-5	196870-32-3	197012-69-4	197012-83-2
	208664-36-2	208709-74-4	280121-93-9	280121-98-4	280122-10-3
	280122-11-4	280122-12-5	280122-13-6	280122-14-7	

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(liquid crystal composition containing; preparation of

(difluoromethyl)benzene derivs.

liquid crystal compds. exhibiting neg. anisotropy of permittivity)

IT	280121-91-7	280121-92-8	280121-94-0	280121-95-1	280121-96-2
	280121-97-3	280122-00-1			

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(liquid crystal composition; preparation of (difluoromethyl)benzene derivs.

liquid

crystal compds. exhibiting neg. anisotropy of permittivity)

IT	280121-63-3P	280121-66-6P	280121-67-7P	280121-71-3P
	280121-75-7P	280121-78-0P	280121-83-7P	280121-85-9P
	280121-86-0P			

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)

IT	75-03-6, Ethyl iodide	106-38-7, 4-Bromotoluene	107-30-2, Methoxymethyl chloride	121-43-7, Trimethyl borate	613-84-3, 5-Methylsalicylaldehyde
	626-60-8, 3-Chloropyridine	40649-36-3, 4-Propylcyclohexanone			
	51436-99-8, 4-Bromo-2-fluorotoluene	79636-94-5,			
	5-Bromo-2-ethoxybenzaldehyde	88639-45-6	98121-48-3	151105-68-9	

163004-99-7 280121-72-4 280121-87-1

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)

IT 452-78-8P, 3-Fluoro-4-methylphenol 132122-19-1P 247176-23-4P
280121-64-4P 280121-65-5P 280121-69-9P 280121-70-2P 280121-73-5P
280121-74-6P 280121-76-8P 280121-77-9P 280121-79-1P 280121-80-4P
280121-81-5P 280121-82-6P 280121-84-8P 280121-88-2P 280121-89-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)

OSC.G 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)

UPOS.G Date last citing reference entered STN: 03 Jun 2009

OS.G CAPLUS 2009:319558; 2009:185116; 2007:434224; 2005:1103723; 2004:1037203

RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE CITED REFERENCES

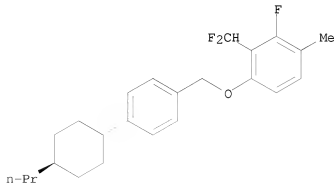
- (1) Anon; JP 05502433 A
- (2) Anon; EP 395666 A1 CAPLUS
- (3) Anon; JP 58154544 A CAPLUS
- (4) Anon; EP 87056 A1 CAPLUS
- (5) Anon; WO 8903821 A1 CAPLUS
- (6) Anon; US 4478740 A 1984 CAPLUS
- (7) Anon; US 5358663 A 1994 CAPLUS
- (8) Basf Ag; DE 19731200 A1 CAPLUS
- (9) Basf Ag; DE 19629523 A1 1998 CAPLUS
- (10) Hoffmann-La Roche Inc; JP 06192190 A CAPLUS
- (11) Hoffmann-La Roche Inc; EP 579066 A2 CAPLUS
- (12) Hoffmann-La Roche Inc; US 5324747 A 1994 CAPLUS
- (13) Jacobi, A; Mol Cryst Liq Cryst Sci Technol, Sect A 1997, V304, P15 CAPLUS
- (14) Riker Laboratories Inc; DE 3931954 A1 CAPLUS
- (15) Riker Laboratories Inc; US 4952574 A 1990 CAPLUS

IT 280121-71-3P 280121-83-7P 280121-86-0P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)

RN 280121-71-3 CAPLUS

CN Benzene, 2-(difluoromethyl)-3-fluoro-4-methyl-1-[[4-(trans-4-propylcyclohexyl)phenyl]methoxy]- (CA INDEX NAME)

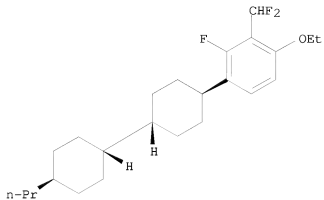
Relative stereochemistry.



RN 280121-83-7 CAPLUS

CN Benzene, 2-(difluoromethyl)-1-ethoxy-3-fluoro-4-[(trans,trans)-4'-propyl[1,1'-bicyclohexyl]-4-yl]- (CA INDEX NAME)

Relative stereochemistry.



RN 280121-86-0 CAPLUS

CN Benzene, 2-(difluoromethyl)-4-ethoxy-3-fluoro-1-[[(trans,trans)-4'-pentyl[1,1'-bicyclohexyl]-4-yl]methoxy]- (CA INDEX NAME)

Relative stereochemistry.

